



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Seed Research

Division of Agrigenetics

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. THE UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS SPECIFIED BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

COMMON WHEAT

'Brawny'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington this 14th day of January in the year of our Lord one thousand nine hundred and eighty-two.

Attest:

Edward J. Lane
Commissioner
Plant Variety Protection Office
Grain Division
Agricultural Marketing Service

John R. Block
Secretary of Agriculture



UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
GRAIN DIVISION
PLANT VARIETY PROTECTION OFFICE
NATIONAL AGRICULTURAL LIBRARY
BELTSVILLE, MARYLAND 20705

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

INSTRUCTIONS: See Reverse.

1a. TEMPORARY DESIGNATION OF VARIETY 4714		1b. VARIETY NAME Brawnif		FOR OFFICIAL USE ONLY PV NUMBER 8100073	
2. KIND NAME Common Wheat 5/8/81 Hard red winter		3. GENUS AND SPECIES NAME Triticum aestivum		FILING DATE 3/16/81	TIME 2:00 P.M.
4. FAMILY NAME (BOTANICAL) Gramineae		5. DATE OF DETERMINATION 1976		FEE RECEIVED \$500.00 \$250.00 \$	DATE 3/16/81 10/23/81
6. NAME OF APPLICANT(S) Seed Research Division of Agrigenetics		7. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code) Route 2, Box 48 Scott City, Mo. 67871		8. TELEPHONE AREA CODE AND NUMBER 316-872-2807	
9. IF THE NAMED APPLICANT IS NOT A PERSON, FORM OF ORGANIZATION: (Corporation, partnership, association, etc.) Corporation		10. STATE OF INCORPORATION New Mexico		11. DATE OF INCORPORATION 5/1/75	
12. Name and mailing address of applicant representative(s), if any, to serve in this application and receive all papers: Kenneth L. Shertzer, President Seed Research Route 2, Box 48 Scott City, Mo. 67871					

13. CHECK BOX BELOW FOR EACH ATTACHMENT SUBMITTED:

- ☒ 13A. Exhibit A, Origin and Breeding History of the Variety (See Section 52 of the Plant Variety Protection Act.)
- ☒ 13B. Exhibit B, Novelty Statement.
- ☒ 13C. Exhibit C, Objective Description of the Variety (Request form from Plant Variety Protection Office.)
- ☒ 13D. Exhibit D, Additional Description of the Variety.

- 14A. Does the applicant(s) specify that seed of this variety be sold by variety name only as a class of certified seed? (See Section 83(a). (If "Yes," answer 14B and 14C below.) ☒ YES ☐ NO
- 14B. Does the applicant(s) specify that this variety be limited as to number of generations? ☒ YES ☐ NO
- 14C. If "Yes," to 14B, how many generations of production beyond breeder seed? ☒ FOUNDATION ☒ REGISTERED ☒ CERTIFIED
15. Does the applicant(s) agree to the publication of his/her (their) name(s) and address in the Official Journal? ☒ YES ☒ NO
16. The applicant(s) declare(s) that a viable sample of basic seed of this variety will be deposited upon request before issuance of a certificate and will be replenished periodically in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

(DATE)
3/12/81
(DATE)

(SIGNATURE OF APPLICANT)
Kenneth L. Shertzer
(SIGNATURE OF APPLICANT)

8100073

13 A. Origin & Breeding History of Brawny

Parentage: Sturdy sel X SR 2370

From an intensive selection program for yield and plant type,
A single plant from this cross was selected in ^{as a single plant} F₄ generation, increased and tested. It was reselected in F₈ generation and tested as 4714, on the basis of additional selection criteria concerning dough mixing properties and tiller production.

From this preliminary increase sufficient seed was obtained to start tests and evaluation. D 9/24/81

Seed classes to be produced beyond breeders seed are foundation, registered, and certified.

No particular requirements are necessary to maintain the purity of Brawny besides using a clean drill for seeding, roguing out any variants, and a clean combine for harvesting.

Brawny is stable for such practical agronomic characteristics as heading, maturity, height, and glume color. It is less variable than Scout when grown under the same conditions.

Foundation, registered, and certified seed are to be grown according to Kansas Crop Improvement requirements.

Roguing is used to remove variants. Straw chaff variants should not exceed 1/10,000 plants.

"We consider the variety uniform and stable." D 9/24/81

8100073

13 B

Most similar variety to Brawny is 5221

5221 PVP #7600049
white heads at
maturity

Brawny
brown heads at
maturity

4714

FORM APPROVED, OMB NO. 40-R3712

FORM GR-470-6
(2-15-73)UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
GRAIN DIVISION
HYATTSVILLE, MARYLAND 20782EXHIBIT C
(Wheat)OBJECTIVE DESCRIPTION OF VARIETY
WHEAT (TRITICUM SPP.)

INSTRUCTIONS: See Reverse.

NAME OF APPLICANT(S) <i>Seed Research</i>	FOR OFFICIAL USE ONLY
ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code) <i>Route 2, Box 48 Scott City, Mo. 67871</i>	PVPO NUMBER <i>8100073</i>
	VARIETY NAME OR TEMPORARY DESIGNATION <i>BRAWNY</i>

Place the appropriate number that describes the varietal character of this variety in the boxes below.

Place a zero in first box (e.g., 089) or 09) when number is either 99 or less or 9 or less.

1. KIND:

1 1 = COMMON 2 = DURUM 3 = EMMER 4 = SPELT 5 = POLISH 6 = POULARD 7 = CLUB

2. TYPE:

2 1 = SPRING 2 = WINTER 3 = OTHER (Specify) _____ 2 1 = SOFT 2 = HARD

2 1 = WHITE 2 = RED 3 = OTHER (Specify) _____

3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO:

 FIRST FLOWERING LAST FLOWERING

4. MATURITY (50% Flowering):

2 NO. OF DAYS EARLIER THAN 2 1 = ARTHUR 2 = SCOUT 3 = CHRIS

 NO. OF DAYS LATER THAN 4 = LEMHI 5 = NUGAINE 6 = LEEDS

5. PLANT HEIGHT (From soil level to top of head):

85 CM. HIGH

 CM. TALLER THAN 1 = ARTHUR 2 = SCOUT 3 = CHRIS

17 CM. SHORTER THAN 2 4 = LEMHI 5 = NUGAINE 6 = LEEDS

6. PLANT COLOR AT BOOTING (See reverse):

 1 = YELLOW GREEN 2 = GREEN 3 = BLUE GREEN

7. ANTER COLOR:

1 1 = YELLOW 2 = PURPLE

8. STEM:

1 Anthocyanin: 1 = ABSENT 2 = PRESENT

2 Hairiness of last internode of rachis: 1 = ABSENT 2 = PRESENT

4 NO. OF NODES (Originating from node above ground)

1 Wax bloom: 1 = ABSENT 2 = PRESENT

1 Internodes: 1 = HOLLOW 2 = SOLID

30 CM. INTERNODE LENGTH BETWEEN FLAG LEAF AND LEAF BELOW

9. AURICLES:

1 Anthocyanin: 1 = ABSENT 2 = PRESENT

 Hairiness: 1 = ABSENT 2 = PRESENT

10. LEAF:

1 Flag leaf at booting stage: 1 = ERECT 2 = RECURVED 3 = OTHER (Specify) _____

 Hair of first leaf sheath: 1 = ABSENT 2 = PRESENT

 MM. LEAF WIDTH (First leaf below flag leaf)

2 Flag leaf: 1 = NOT TWISTED 2 = TWISTED

1 Wax bloom of flag leaf sheath: 1 = ABSENT 2 = PRESENT

 CM. LEAF LENGTH (First leaf below flag leaf)

FORM GR-470-6 (REVERSE)

11. HEAD:

☒ 2 Density: 1 = LAX 2 = *Mid* DENSE ☒ 4 Shape: 1 = PERING 2 = STRAP 3 = CLAVATE 4 = OTHER (Specify) *slightly fusiform*

☒ 4 Awedness: 1 = AWNLESS 2 = APICALLY AWNLETED 3 = AWNLETED AWNED

☒ 5 Color at maturity: 1 = WHITE 2 = YELLOW 3 = PINK 4 = RED 5 = BROWN 6 = BLACK 7 = OTHER (Specify):

☐ 7 CM. LENGTH ☐ 10 MM. WIDTH

12. GLUMES AT MATURITY:

☒ 3 Length: 1 = SHORT (CA. 7 mm.) 2 = MEDIUM (CA. 8 mm.) 3 = LONG (CA. 9 mm.) ☒ 7 Width: 1 = NARROW (CA. 3 mm.) 2 = MEDIUM (CA. 3.5 mm.) 3 = WIDE (CA. 4 mm.)

☒ 1 1 Glabrous 2 Pubescent

☒ 5 Shoulder shape: 1 = WANTING 2 = OBLIQUE 3 = ROUNDED 4 = SQUARE 5 = ELEVATED 6 = APICULATE ☒ 3 Beak: 1 = OBTUSE 2 = ACUTE 3 = ACUMINATE

13. COLEOPTILE COLOR:

☒ 1 1 = WHITE 2 = RED 3 = PURPLE

14. SEEDLING ANTHOCYANIN:

☐ 1 = ABSENT 2 = PRESENT

15. JUVENILE PLANT GROWTH HABIT:

☒ 1 1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT

16. SEED:

☒ 2 Shape: 1 = OVATE 2 = *long* OVAL 3 = ELLIPTICAL ☒ 1 Check: 1 = ROUNDED 2 = ANGULAR

☒ 3 Brush: 1 = SHORT 2 = MEDIUM 3 = LONG ☒ 2 Brush: 1 = NOT COLLARED 2 = *slightly* COLLARED

☐ Phenol reaction (See instructions): 1 = IVORY 2 = FAWN 3 = LT. BROWN 4 = BROWN 5 = BLACK

☒ 3 Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER (Specify):

☐ 6 MM. LENGTH ☐ 3 MM. WIDTH ☐ GM. PER 1000 SEEDS

17. SEED CREASE:

☒ 1 Width: 1 = 60% OR LESS OF KERNEL 'WINOKA' 2 = 80% OR LESS OF KERNEL 'CHRIS' 3 = NEARLY AS WIDE AS KERNEL 'LEMHI'

☒ 1 Depth: 1 = 20% OR LESS OF KERNEL 'SCOUT' 2 = 35% OR LESS OF KERNEL 'CHRIS' 3 = 50% OR LESS OF KERNEL 'LEMHI'

18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

☒ 2 STEM RUST (Races) ☒ 2 LEAF RUST (Races) ☐ 0 STRIPE RUST (Races) ☐ 0 LOOSE SMUT

☐ 0 POWDERY MILDEW ☐ 0 BUNT ☐ OTHER (Specify):

19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

☐ 0 SAWFLY ☐ 0 APHID (Bydv.) ☐ 0 GREEN BUG ☐ 0 CEREAL LEAF BEETLE

☐ OTHER (Specify): HESSIAN FLY RACES: ☐ GP ☐ A ☐ B ☐ C ☐ D ☐ E ☐ F ☐ G

20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	5221	Seed size	5221
Leaf size	"	Seed shape	"
Leaf color	"	Coleoptile elongation	"
Leaf carriage	"	Seedling pigmentation	"

INSTRUCTIONS

GENERAL: The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form:

(a) L.W. Briggles and L. P. Reitz, 1963, Classification of Triticum Species and Wheat Varieties Grown in the United States, Technical Bulletin 1278, United States Department of Agriculture.

(b) W.E. Walls, 1965, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity, contribution No. 28 to the handbook of seed testing prepared by the Association of Official Seed Analysts. (See attachment.)

LEAF COLOR: Nickerson's or any recognized color fan should be used to determine the leaf color of the described variety.

13 D. Botanical Characteristics of Brawny

Plant Characteristics:

1. Maturity: early , 2 days earlier than Scout 66
2. Height: semi dwarf, 85 cm compared to 102 cm.
for Scout 66 under dryland
3. Habit of Growth: winter (prostrate)

Stem Characteristics:

1. Strength: good
2. Hollow straw

Spike Characteristics:

1. Awns: long, brown
2. Shape: slightly fusiform
3. Density: mid dense
4. Position: inclined
5. Shattering: resistant

Glume Characteristics:

1. Color: brown
2. Length: 9 mm
3. Width: almost 3 mm
4. Shoulder: square to elevated
5. Beak: acuminate narrow 4-5 mm

Kernel Characteristics:

1. Color: red
2. Length: 5.7 mm
3. Width: 3 mm
4. Germ: ~~large~~ mid sized 7/24/81
5. Texture: hard
6. Shape: long oval
7. Crease: narrow
8. Brush: large long slight collar
9. Cheeks: rounded

Quality Characteristics:

Quality sheets attached

SOME COMPARISONS OF PROPOSED VARIETIES AND TWO CHECKS

VARIETY	TESTING NO	SEASON	DRYLAND HEIGHT	GLUME COLOP
FRONTIERSMAN	5471	= Triumph	83 cm	BROWN
ENCORE	5417	= Triumph	88 cm	BROWN
CITATION	4335	= Triumph	73 cm	WHITISH YELLOW
BRAWNY	4714	Scout- 2 days	85 cm	BROWN
TRIUMPH 64	----	VERY EARLY	93 cm	WHITISH YELLOW
SCOUT 66	----	EARLY MIDSEASON	122 cm	WHITISH YELLOW

VARIETY	SOIL BORNE MOSAIC RES (1-5)	LODGING (1-5)	GENETICALLY HIGH PROTEIN	LEAF RUST RES. (1-5)	STEM RUST RES. (1-5)
FRONTIERSMAN	4	4	YES	5	5
ENCORE	4	4	YES	5	5
CITATION	2	4	NO	4	5
BRAWNY	-	4	YES	4	5
TRIUMPH 64	3	2	NO	2	4
SCOUT 66	2	2	NO	3	4

On all the 1-5 ratings the higher number is best rating.

Triumph was one of the more important wheats in the Haven, Kansas community when we started using that area as a test site.

Scout 66 has been used as a check variety because of its widespread use.

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FINNEY EV-80109

QUALITY EVALUATION FROM KARL FINNEY
 USDA GRAIN MARKETING RESEARCH CENTER (MIXOGRAM)
 SCOTT COUNTY 1982 SAMPLES

VARIETY NAME	SAMPLE NO	WT/BU LB	FLOUR YIELD %
SCOUT 66 (CHECK)	80-2401	62.5	72.3
NEWTON (CHECK)	80-2432	62.3	70.0
FRONTIERSMAN (5471)	80-2440	62.2	71.2
ENCORE (5417)	80-2441	62.4	69.3
BRAWNY (4714)	80-2435	61.8	70.4
CITATION (4685)	80-2442	61.6	69.6

VARIETY NAME	FLOUR PROTEIN % (14% MOISTURE)	ABSORPTION %	MIXING TIME
SCOUT 66 (CHECK)	12.9	63.0	3 MIN.
NEWTON (CHECK)	11.8	61.3	3.75 MIN.
FRONTIERSMAN (5471)	15.0	63.0	3 MIN.
ENCORE (5417)	16.5	66.0	2 MIN.
BRAWNY (4714)	15.8	65.1	5 MIN.
CITATION (4685)	11.7	60.5	3.75 MIN.

SUMMARY OF DOTY LABORATORY DATA
1979 SAMPLES
(FARINOGRAPH)

VARIETY NAME	LAB NO	% GRAIN SED	FALLING MIN	MIXING			
		PROTEIN NO.	NO.	TOL.			
			ARR	PEAK			
5471 (FRONTIERSMAN)	LB798	16.0	69	466	8	15.5	17
5417 (ENCORE)	LB799	16.7	72	457	6	10	13

	MTI	ABS	VOL CC	RATING	CRUMB SCORE	TEXTURE
5471 (FRONTIERSMAN)	20	68.5	855	EXC. +	97	CLOSE, EVEN, SILKY
5417 (ENCORE)	25	71.0	830	EXC.	97	CLOSE EVEN SILKY

SUMMARY OF SEABOARD ALLIED DATA ON
GENETICALLY HIGH PROTEIN SAMPLES 1980
(FARINOGRAPH)

VARIETY NAME	LAB NO.	TEST WT	MOISTURE	% GRAIN PROTEIN	BU/CWT FLOUR YIELD
5471 (FRONTIERSMAN)	LB80255	61.4	10.4	16.9	2.31
5417 (ENCORE)	LB80254	62.2	10.4	18.25	2.37
4714 (BRAWNY)	LB80252	61.2	10.7	15.45	2.44

VARIETY NAME	ASH	ARRIVAL TIME	PEAK	ABS.	MTI	VOL.
5471 (FRONTIERSMAN)	.44	6	15	66.0	10	1040
5417 (ENCORE)	.430	4	9	69.5	30	1065
4714 (BRAWNY)	.473	5	21.5	64.6	20	1065

QUALITY EVALUATION DATA
DIXIE PORTLAND MILLING CO.
(FARINOGRAPH DATA)
1980 SAMPLES

VARIETY	% GRAIN PROTEIN	% MOISTURE	LBS/BU TEST WEIGHT	% FLOUR EXTRACTION	% FLOUR PROTEIN	% MOISTURE
FRONTIERSMAN	16.4	11.2	62	69.8	15.0	13.1
ENCORE	17.6	11.2	63	70.9	16.2	13.0
BRAWNY	14.6	11.6	62	70.6	12.85	14.15

VARIETY	MIXING TIME	PEAK	STABILITY	MTI	ABS	VOLUME
FRONTIERSMAN	5.5	6	22	10	75.3	960
ENCORE	4	8	19	5	80.7	925
BRAWNY	6.25	9.5	18+	20	70.5	895

VARIETY	BAKING SCORE	BAKING RATING	CRUMB COLOR RATING
FRONTIERSMAN	85	GOOD	97+
ENCORE	82	GOOD	97-
BRAWNY	85	GOOD+	97+